**DUE DATE: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

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| **NAME** |  | **CLASS** |  | **DATE** |  |

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| **You will be assessed on the following criteria:** | | |
| **Criterion A**: *Knowledge and Understanding (max 8)* | ***Your level:*** |  |
| **Criterion C**: *Communications in mathematics (max 6)* | ***Your level:*** |  |
| **Criterion D**: *Reflections in Mathematics (max 6)* | ***Your level:*** |  |

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| * **Calculate and display statistical measures of the 2009/2010 International Maths Test.** * **Based on statistical analysis, make recommendations for changes:**  1. **For the class as a whole; and,** 2. **For students B and P.** |

**TASK DETAILS:**

1. Calculate the measure of central tendency for Raw Scores.
2. Find range, mode, median and mean of Raw Scores.
3. Organize data in a table.
4. Calculate the measure of spread for Raw Scores:

a. Identify all quartiles.

b. Calculate the inter-quartile range.

c. Are there outliers that may affect the mean?

d. By defining the term *outlier*, explain your response for *c.*

1. Display Raw Score data in a box-and-whiskers plot.

a. Identify the five-point summery.

1. Construct a box-and-whisker plot.

IV. Measure and display of spread of raw scores

a. Calculate the:

* + - χ
    - ση

1. List the raw scores that are within 1 standard deviation.
2. Taking *b* into consideration, what type of curve would you say best displays the Raw Score data?

V. Analyzing the data

There are 40 questions on this test.

a. Out of the ones answered correctly, which question is the mode?

b. Which is the mode of the questions answered *incorrect*?

* + - 1. Using the data from *b,* what conclusions could you make based on this information?
      2. What decision would you make based on your conclusion?
    1. What information does the row labelled “***this class***” tell you?
    2. What recommendations would you make for the class as a whole?
    3. What recommendations would you make for students B and P?

VI. *Suppose* …

The schools Basketball coach has kept records of the number of “3 point shots” players

have made per game. Below are the results for the teams top two shooters in the first fourteen games of the season:

Zack: 1,1,3,2,3,2,5,4,6,7,4,5,6,7 (number of *3pt* shots)

Dan: 7,8,5,6,7,8,9,6,7,7 (number of *3pt* shots)

1. Calculate the mean for each player.
2. Calculate the standard deviation.
3. Which player is most likely to have close to four *3p*t shots at the next game?
4. If the coach had to pick one of two players, which might he choose?
5. Explain what would influence the coach’s decision.

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You will need to do the following:

* **Calculations:**

**You may use your calculator to find calculations of different measures. Be sure to show your work for all calculations!** State your answers beside your work, labelled and in a box

* **Define all terms used.**
* **Be sure to use paragraph form and complete sentences when explaining math processes** and/or communicating mathematically.
* **Draw your graphs with appropriate scale axis.**

Your explanations and written responses should contain the following sections:

* **Clear and legible sentences.**
* **Graphs** showing any visuals necessary to illustrate or complement your explanations.
* **Explanation of calculations** if you have used a calculator (show work!)

**To obtain the highest level for the following criteria you will need to do the following.**

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| **Criteria** | **Level** | **Descriptors** | **Indicators** |
| ***Criterion A***  **KNOWLEDGE AND UNDERSATNDING** | **0** | * You have not reached a standard described by any of the descriptors given below. | * You have not reached a standard described by any of the descriptors given below. |
| **1-2** | * You have **attempted** to make deductions when solving **simple** problems in **familiar** contexts. | * You have **attempted** to collect and analyse data using measures of central tendency (mean, median, mode, and range) and spread (box-and-whiskers and standard deviation). * You have **attempted** to group, tabulated and graphed data to aid analysis * You have **demonstrated an attempt** to use measures of spread to analyse data in familiar situations. |
| **3 - 4** | * + You have **sometimes** made **appropriate** deductions when solving **simple and more-complex** problems in **familiar** contexts. | * You have **sometimes** collected and analysis data using measures of central tendency (mean, median, mode, and range) and spread (box-and-whiskers and standard deviation). * You have **sometimes** grouped, tabulated and graphed data to aid analysis * You have **sometimes** used measures of spread to analyse data in familiar situations only with guidance. |
| **5-6** | * You have **generally** made **appropriate** deductions when solving **challenging** problems in a **variety** of **familiar** context. | * You have **generally** collected and analysed data using measures of central tendency (mean, median, mode, and range) and spread (box-and-whiskers and standard deviation) with some guidance. * You have **generally** grouped, tabulated and graphed data to aid analysis with some guidance. * You have **generally** used measures of spread to analyse data in familiar situations only. |
| **7-8** | * + You have **consistently** made **appropriate** deductions when solving **challenging** problems in a **variety** of contexts including **unfamiliar** situations. | * You have **consistently** collected and analysed data using measures of central tendency (mean, median, mode, and range) and spread (box-and-whiskers and standard deviation). * You have **consistently** grouped, tabulated and graphed data to aid analysis * You have **consistently** used measures of spread to analyse data in unfamiliar situations. |

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| **Criteria** | **Level** | **Descriptors** | **Indicators** |
| ***Criterion C***  **COMMUNICATION IN MATHEMATICS** | **0** | * You have not reached a standard described by any of the descriptors given below. | * You have not reached a standard described by any of the descriptors given below. |
| **1-2** | * You have shown **basic** use of mathematical language **and/or** forms of mathematical representation. The lines of reasoning are **difficult to follow.** | * You have shown **a few of the steps** in your calculations. * You have **inconsistently** rounded to two decimals places. * You have used only a **few mathematical terms** to explain your answer. * You **have not included** all of the following in your graph: neatly labelled axes and lines, appropriate axes scales, and graph title. * You have used **mostly improper** sentence structure and could not clearly communicate your suggestions. |
| **3-4** | * You have shown **sufficient** use of mathematical language **and** forms of mathematical representation. The lines of reasoning are **clear** though not always **logical** or **complete**. * You have demonstrated the ability to manipulate between different forms of representation **with some success**. | * You have **shown most** steps in your calculations clearly and neatly and have rounded to two decimals places. * You have used **mostly precise** mathematical language and notation to explain your answer. * You have **included most of the following** in your graph: neatly labelled axes and lines, appropriate axes scales, and graph title. * You have used **mostly proper** sentence structure and could often communicate your suggestions. |
| **5-6** | * You have shown **good** use of mathematical language **and** forms of mathematical representation. The lines of reasoning are **concise**, **logical** and **complete** * You have demonstrated the ability to manipulate **effectively** between different forms of representation. | * You have **shown all** steps in your calculations clearly and neatly and have rounded to two decimals places. * You have used **precise** mathematical language and notation to explain your answer. * You have **included all of the following** in your graph: neatly labelled axes and lines, appropriate axes scales, and graph title. * You have used **proper sentence structure** and could clearly communicate your suggestions. |

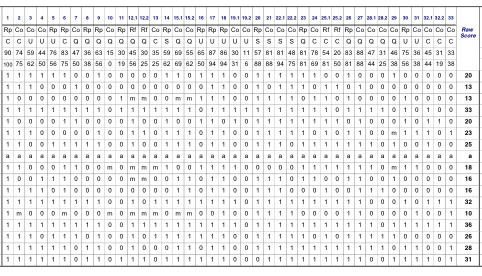
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| **Criteria** | **Level** | **Descriptors** | **Indicators** |
| **Criterion D**  **REFLECTION IN MATHEMATICS** | **0** | * You have not reacheded a standard described by any of the descriptors given below | * You have not reached a standard described by any of the descriptors given below. |
| **1-2** | * You have **attempted** to explain whether his or her results make sense in the context of the problem. You **attempt to describe** the importance of his or her findings in connection to real life. | * + You had **difficulty interpreting** meaningful conclusions from raw data scores.   + You have used measures of spread to analyse data and explain the importance of your findings in terms of **limited** suggestions and recommendations for the entire class.   + You have used measures of spread to analyse data and explain the importance of your findings in terms of **limited suggestions and recommendations** for 2 students. |
| **3-4** | * You have **correctly but briefly explained** whether your results make sense in the context of the problem and **described** the importance of his or her findings in connection to real life. * You have **attempted** to justify the   degree of accuracy of his or her results  where appropriate. | * + You were able to interpret **reasonably meaningful conclusions** from raw data scores.   + You have used measures of spread to analyse data and explain the importance of your findings in terms of suggestions and recommendations for the entire class with **some guidance**.   + You have used measures of spread to analyse data and explain the importance of your findings in terms of suggestions and recommendations for 2 students **independently***.* |
| **5-6** | * You have **critically explained** whether your results make sense in the context of the problem and provides a **detailed explanation** of the importance of his or her findings in connection to real life. * You have **justified** the degree of accuracy of your results where appropriate. You have **suggested improvements** to the method when necessary. | * + You were able to **interpret meaningfu**l conclusions from raw data scores.   + You have used measures of spread to analyse data and explain the importance of your findings in terms of suggestions and recommendations for the entire class **without guidance**.   + You have used measures of spread to analyse data and explain the importance of your findings in terms of suggestions and recommendations for 2 students **independently**. |

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| **SELF-ASSESSMENT** | **A,C,D** | **STUDENT COMMENT:**    **Parents’ signature:** |

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2009 – 2010 International Assessment of Mathematics

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| Questions |
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| All 8th |
| This class |
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Key: a- absent (not included) m – missing answer (Value = 0) 0 – wrong 1 - correct